

Claims

1 1. A hybrid pesticidal protein toxin comprising a cytotoxic agent and a pest gut
2 epithelial cell recognition portion of a protein said cytotoxic agent and said recognition
3 portion not being naturally contiguous.

1 2. The toxin, according to claim 1, wherein said cytotoxic agent is an ADP-
2 ribosylating enzyme.

1 3. The toxin, according to claim 2, wherein said ADP-ribosylating enzyme is
2 diphtheria toxin.

1 4. The toxin, according to claim 1, wherein said cytotoxic agent is a ribosome
2 inactivating enzyme selected from the group consisting of ricin, dianthin, saporin, gelonin,
3 tritin, abrin, and modeccin.

1 5. The toxin, according to claim 1, wherein said cytotoxic agent is a ribosome
2 inactivating enzyme obtainable from a seed selected from the group consisting of barley, rye,
3 corn, and wild bean.

1 6. The toxin, according to claim 3, wherein the diphtheria toxin used is the A
2 fragment of the diphtheria toxin, plus the B fragment of the diphtheria toxin which has been
3 truncated at the carboxyl terminus to remove the eukaryotic recognition region.

1 7. The toxin, according to claim 1, wherein said pesticidal protein toxin is a *Bacillus*
2 *thuringiensis* protein toxin.

1 8. The toxin, according to claim 7, wherein said *Bacillus thuringiensis* protein toxin

2 is expressed by the gene fragment from *Bacillus thuringiensis* Var. *kurstaki* H.D.-73.

1 9. The toxin, according to claim ~~1~~, wherein said cytotoxic agent and pest gut
2 epithelial cell recognition portion of a protein are linked together by a peptide linker of
3 suitable length and amino acid composition to minimize susceptibility to insect protease
4 cleavage.

1 10. The toxin, according to claim 9, wherein said peptide linker consists of four or
2 less amino acids.

1 11. The toxin, according to claim 9 wherein said peptide linker does not contain
2 lysine residues.

1 12. A toxin, according to claim 1, wherein said pest gut epithelial cell recognition
2 portion of a protein is a nuclear polyhedrosis virus recognition fusogen.

1 13. The toxin, according to claim 12, wherein said nuclear polyhedrosis virus
2 recognition fusogen is linked to a cytotoxic agent by a peptide linker of suitable length and
3 amino acid composition to minimize susceptibility to insect protease cleavage.

1 14. The toxin, according to claim 13, wherein said peptide linker consists of four or
2 less amino acids

1 15. The toxin, according to claim ~~12~~, wherein said peptide linker does not contain
2 lysine residues.